

APPLIANCE FOR THE SMOOTHING OF SHIRTS

5 Cross-Reference to Related Application:

This application is a continuation of copending International Application No. PCT/EP02/00905, filed January 29, 2002, which designated the United States and was not published in English.

10 Background of the Invention:

Field of the Invention:

The invention relates to an appliance for the smoothing of shirts, in particular, for smoothing the ends of the shirt sleeves and the cuffs, the shirt collar, and the button tapes.

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According to a prior art method, shirts are smoothed by being fixed at various points and being inflated, in particular, by warmed air and tensioned, while the shirt may, additionally, be drawn apart at the fixed points.

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In another method for the smoothing of shirts, an inflatable swelling bag is used, around which the shirt is disposed. In such a case, the shirt does not have to be fixed because the swelling bag holds it. The cuffs, are in these cases, smoothed  
25 by sleeve portions of the swelling bag. When a swelling bag is used, it is known to fix the button tape and also the sleeves

or the collar of the shirt to be smoothed so as not to have to button it up, as is disclosed, for example, from United States Patent No. 3,165,244 to Dosal.

5 When such a swelling bag is used, however, there is the problem that, although the surface of the swelling bag is warmed uniformly by the warmed air flowing in, nevertheless, individual points on a shirt to be smoothed, at which thicker material is used or the material is a multi-ply, such as, for  
10 example, the cuffs, the collar, or the button tape, are not sufficiently smoothed because the warmed air cannot generate sufficient warmth at these points. Likewise, however, a more pronounced warming of the air to be supplied or a longer treatment of the shirt to be smoothed would lead, *inter alia*,  
15 to an overloading of the shirt in the remaining regions.

Summary of the Invention:

It is accordingly an object of the invention to provide an appliance for the smoothing of shirts that overcomes the  
20 hereinafore-mentioned disadvantages of the heretofore-known devices of this general type and in which the cuffs and the collar or the button tape and also the shirt as a whole are smoothed satisfactorily.

25 With the foregoing and other objects in view, there is provided, in accordance with the invention, an appliance for

the smoothing of shirts has an inflatable shirt-shaped swelling bag with a body portion, two sleeve portions, and a collar portion and partially or continuously has heating bodies.

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What is achieved by providing heating bodies in the entire shirt-shaped swelling bag is that a smoothing of the shirt is ensured even in the event of lesser or no warming of the air introduced into the swelling bag. Thus, the duration of the introduction of warm air into the swelling bag can be reduced, as compared with conventional appliances, because sufficient energy is generated by the provision of the heating bodies in order, thereby, to smooth the shirts.

15 What is achieved by the provision of heating bodies in defined regions of the swelling bag is that, in these regions, the shirt experiences, in addition to the energy emitted by the warmed air introduced, a supply of energy through the heating bodies, the shirt being sufficiently smoothed as a result. In accordance with another feature of the invention, the heating  
20 bodies are implemented in the form of heating filaments that are glued on or are woven into the cloth of the swelling bag. The glued-on heating filaments may be attached on the inside of the swelling bag and on the outside of the swelling bag.

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In accordance with a further feature of the invention, the heating filaments are embroidered into the swelling bag.

In accordance with an added feature of the invention, the  
5 heating filaments are applied to the cloth.

In accordance with an additional feature of the invention, the heating bodies heat with different radiant-heating capacities in different regions of the bag.

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In general, different radiant-heating capacities may be achieved by a different activation of various heating devices and/or by the provision of heating devices with different radiant-heating capacities, for example, by heating filaments  
15 that are laid more or less close together. The regions in which the shirt dries more slowly can, consequently, be heated to a greater extent in a controlled manner. Furthermore, the cut or the type of the shirt can, consequently, also be taken into account, for example, if the shirt has breast pockets or  
20 appliqué work or additional cloth layers at specific points.

The heating of the swelling bag may also be regulatable or controllable in terms of all the heating devices to take into account different materials so that, for example, where silk  
25 is concerned, lower temperatures can be set than in the case of cotton.

In accordance with yet another feature of the invention, advantageously, heating conductors are used, the resistance of which increases sharply at rising temperatures and,

5 particularly, from a specific temperature so that self-regulation of the temperature is achieved. The heat losses in the more rapidly dry regions can, thereby, be limited.

For such a purpose, in accordance with yet a further feature  
10 of the invention, the heating bodies may be provided in the region of the collar portion, in the region of the shirt cuffs at the ends of the two sleeve portions, and/or in the region of the button tape and buttonhole tape.

15 In accordance with yet an added feature of the invention, the energy source of the heating bodies is, preferably, located in the base of the swelling bag, the base also serving as a standing foot for the appliance. The base has, furthermore, a blower and a heating device so that the warmed air can be  
20 introduced into the swelling bag.

In accordance with yet an additional feature of the invention, the regions in which the heating filaments are woven in or glued on are air-permeable. What is achieved thereby is that  
25 the shirt is warmed and, therefore, smoothed in the immediate

vicinity to the collar portion both by the warmed air introduced and by the energy emitted by the heating bodies.

In accordance with again another feature of the invention, the  
5 heating bodies are assigned temperature sensors and/or moisture sensors and the temperature of the heating bodies is set as a function of the detected temperature and/or moisture of the shirt portion to be smoothed. It is, thereby, possible to implement a synchronous drying of all the portions of the  
10 shirt, overdrying of thin or single-ply portions being avoided.

In accordance with again a further feature of the invention, the heating bodies are electrical resistance heating elements.  
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In accordance with again an added feature of the invention, the electrical resistance heating elements have a positive temperature coefficient in a temperature range.

20 With the objects of the invention in view, there is also provided an appliance for smoothing shirts, including an inflatable shirt-shaped, cloth swelling bag having a body portion having a button tape region and a buttonhole tape region, two sleeve portions with ends, a collar portion, and  
25 heating filaments at least one of woven into and applied on the cloth of at least one of at the collar portion, at the

ends, at the button tape region, and at the buttonhole tape region.

Other features that are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in an appliance for the smoothing of shirts, it is, nevertheless, not intended to be limited to the details shown because various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

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Brief Description of the Drawings:

FIG. 1 is a fragmentary elevational view from the front of an appliance according to the invention for the smoothing of shirts; and

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FIG. 2 is a fragmentary, enlarged, side view of the collar portion of the appliance of FIG. 1.

Description of the Preferred Embodiments:

5 Referring now to the figures of the drawings in detail and first, particularly to FIG. 1 thereof, there is shown an appliance 1 for the smoothing of shirts, with a swelling bag 2 that is mounted on a base 6, not illustrated in its entirety. The swelling bag 2 has a body portion 3, two sleeve portions  
10 4, and a collar portion 5. The base 6, which also serves as a standing foot for the appliance, has a blower 12 and a heating device 13 so that the swelling bag 2 can be inflated with warm air. In addition, the collar portion 5 has fastened above it an air deflection part 7 that can deflect downward the air  
15 emerging from the collar portion, particularly, at the top and can guide the air from outside onto a fixed collar.

Heating bodies 8 in the form of heating filaments are provided in the region of the collar portion 5. In the embodiment  
20 shown in FIG. 1, the heating bodies 8 are woven or embroidered into the material of the swelling bag 2, one of which is dashed, thus indicating that the filament is woven. An energy source 9 that supplies the heating bodies 8 with voltage is provided in the base 6. What is achieved thereby, in the case  
25 of a shirt laid onto the swelling bag 2, is that the shirt is warmed and, therefore, smoothed in the immediate vicinity of



the collar portion 5 both by the warmed air introduced and by the energy emitted by the heating bodies 8.

For the same purpose, heating bodies 10, 11 in the form of heating filaments are provided in the region of the shirt cuffs at the ends of the two sleeve portions 4 and/or in the region of the button tape and buttonhole tape in the body portion 3. These heating bodies 10, 11, too, are woven into the material of the swelling bag 2 and are supplied with voltage by the energy source 9.

The side view according to FIG. 2 shows the collar portion 5 with heating filaments 8 disposed in it. The air deflection part 7 is not illustrated in the view of FIG. 2. In this preferred embodiment, the heating filaments 8 are provided in the collar portion 5 solely in the regions in which the shirt collar rests against the swelling bag 2.

Preferably, the heating filaments 8 are electrical resistance heating elements having a positive temperature coefficient in a temperature range.